

## **REMARKS**

### Claim status and claim amendments

Claims 14 and 16-30 and 38-39 were pending in the present application. Claims 14 and 16-30 stand rejected based on arguments laid out in the Office Action mailed on January 3, 2011. Claims 38-39 are cancelled without prejudice to Applicant's right to prosecute their subject matter in the present application and in related applications. Claims 14, 17-20 and 24 have been amended without any intent of disclaiming equivalents thereof. New claims 40-42 are added.

Claims 14, 17-20 and 24 are amended for clarification.

Support for new claims 40-42 can be found throughout the specification as originally filed. For example, claim 40 finds support notably in Table 3 and in paragraph [0074]. Claim 41 finds support notably in Table 9, paragraph [0116], Table 13 and paragraph [0135]. Claim 42 finds support notably in Table 2 and paragraphs [0073] and [0074].

Accordingly, upon entry of the present Amendment, claims 14, 16-30 and 40-42 are pending and presented for consideration. Applicants submit that no new matter has been added by way of the present amendment.

### Rejection under § 103 (a)

Claims 14 and 16-30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,511,661 (hereinafter "Olshenitsky et al.") (see page 3 of the Office Action). The Office Action indicates on page 4 that a person skilled in the art having read Olshenitsky et al. would have been able to simply substitute the known non-pathogenic probiotic microorganism ATCC Deposit No. 202226 described therein with any strain of non-pathogenic *E. coli*, with a reasonable expectation of successfully

enhancing animal growth. Particularly absent any evidence of an unexpected advantage or result with the claimed strain.

Applicants respectfully disagree, and submit that the aforementioned claims distinguish clearly and patentably over Olshenitsky et al. for at least the following reasons.

- **Claim 14**

Claim 14 is reproduced below for the Examiner's convenience:

14. Method of promoting growth of an animal, comprising the step of:  
**feeding the animal with an F4+ non-pathogenic *Escherichia coli* strain, wherein the F4+ non-pathogenic *Escherichia coli* strain is in an amount effective to promote growth of the animal.**

Applicants respectfully submit that the subject matter of independent claim 14 is neither anticipated nor rendered obvious by the reference cited by the Examiner. Without limiting the generality of the foregoing, Applicants submit that Olshenitsky et al. does not disclose, teach or suggest at least the above-emphasized features of independent claim 14.

Before discussing the reasons for which Applicants believe the claimed invention is not obvious in view of Olshenitsky et al., a summary of this reference is presented below in order to establish its scope and content.

Olshenitsky et al. describes a formulation comprising an aqueous solution of a volatile fraction (VF) prepared from the extract of at least one plant derived material and its therapeutic uses. (*See*, item #1 below). Olshenitsky et al. also describes a probiotic microorganism deposited with the ATCC Deposit No. 202226 and at DSMZ under deposit no. 12799. (*See*, item # 2 below). Olshenitsky et al. further describes that the above formulation and the above probiotic microorganism can be included in a single composition. (*See*, item # 3 below).

- **Item #1**

Olshenitsky et al. describes at column 7, lines 50-54 and in Example 13, at column 15, that pre-weaning piglet administered with a formulation that includes an aqueous solution of the VF **gained weight at weaning on the average 1.0 kg per piglet** more than the control group. (See, Example 3 for the components of the formulation used in Example 13.)

- Item #2

Olshenitsky et al. further describes that the **probiotic microorganism ATCC Deposit No. 202226 is useful for treatment or prevention of gastro-enteric infections or disorders, maintaining or reinstating normal gastrointestinal microflora**, preventing or treating diarrhea, preventing or treating gastro-enteric infection caused by an enteric pathogen, preventing or treating gastro-enteric Salmonella infection, preventing or treating infectious diarrhea, chronic diarrhea or diarrhea resulting from antibiotic therapy, radiotherapy or chemotherapy, for normalizing the physiological activity of the gastrointestinal tract, for treatment or prevention of dyspeptic symptoms, and for enhancing the immune response in a patient suffering from an immune disorder. (See, column 3, line 63 to column 4, line 9; and column 4, lines 48-57.)

- Item # 3

Olshenitsky et al. also describes in Example 14, at column 15, that pre-weaning piglet administered with a composition that includes the aqueous solution of the VF and the probiotic microorganism ATCC Deposit No. 202226 also gained weight at weaning **but on the average this was of 0.39 kg per piglet** more than the control group. (See, Example 5 for the components of the formulation used in Example 14.)

Olshenitsky et al. further describes in Example 20, at column 17, that administration of a composition including the aqueous solution of the VF and the probiotic microorganism ATCC Deposit No. 202226: (i) to chicken during the breeding period resulted in an **increase of 3.2% in weight gain (0.01 ml per day)**, and (ii) to turkeys of age 1 day to 6 weeks resulted in a **weight gain of over 10% (0.01 ml per**

**day).** (See, Example 5 for the components of the formulation used in Example 20.) And that birds that ***still exhibited diarrhea*** were treated (higher dose of **0.1 ml per day**) with the composition and showed better recovery from the control birds that were treated only with antibiotics.

Applicants are of the view that Olshenitsky et al. fails to teach or suggest the invention defined in claim 14 for a number of reasons.

- **Firstly, Applicants respectfully submit that the Patent Office has failed to established a *prima facie* case of obviousness**

Applicants believe that the Office has not established a *prima facie* case of obviousness: the Office Action has not addressed the limitation that the *E. coli* strain recited in the claims is F4+ (see, MPEP 2143.03) at all and, actually concedes that Olshenitsky et al. does not disclose F4+ *E. coli*. (See, Office Action at page 4). To be able to establish a *prima facie* case of obviousness, the prior art must disclose all the limitations of the claim. (See, MPEP 2143.03 “All words in a claim must be considered in judging the patentability of that claim against the prior art.”)

While Applicants believe that the Office has not established a *prima facie* case of obviousness, the cited reference is nevertheless addressed below.

- **Secondly, Applicants respectfully submit that Olshenitsky et al. teaches away from using a non-pathogenic *Escherichia coli* strain to promote growth of an animal.**

Olshenitsky et al. clearly discloses that the therein described probiotic non-pathogenic microorganism is useful for treatment or prevention of gastro-enteric infections or disorders, maintaining or reinstating normal gastrointestinal microflora, for treatment or prevention of dyspeptic symptoms, and for enhancing the immune response in a patient suffering from an immune disorder. (See, item #2 above). **Olshenitsky et al. does not disclose or suggest that the probiotic non-pathogenic microorganism ATCC Deposit No. 202226 in itself has any effect on promoting weight gain of an animal.**

Olshenitsky et al. also discloses that using a formulation comprising an aqueous solution of a volatile fraction (VF) of a plant extract will promote gain weight (*i.e.*, Example 13: 1.0 kg per piglet). (*See*, item #1 above). In contrast, **addition of the probiotic microorganism ATCC Deposit No. 202226 to this formulation will result in less efficient weight gain** then when using the formulation alone (*i.e.*, Example 14: 0.39 kg per piglet – which constitutes **a reduction of about 60%** of the weight gain associated with the VF-containing formulation alone). (*See*, item #3 above).

The Examiner will thus appreciate that the **probiotic non-pathogenic microorganism ATCC Deposit No. 202226 has a negative effect on the weight gain-promoting effect associated with the plant extract (VF)** described in Olshenitsky et al.

It is therefore submitted that Olshenitsky et al. actually **teaches away** from using a non-pathogenic *E. coli* to promote weight gain of an animal. Indeed, Applicants believe that a person wishing to promote weight gain of an animal would reasonably wish to do so without having the microorganism ATCC Deposit No. 202226 associated negative effect (see above), and would thus most likely **simply administer the VF extract alone**.

In view of the above, Applicants submit that a person skilled in the art would therefore not look to Olshenitsky et al. for guidance in order to arrive at the invention defined in claim 14.

- **Thirdly, Applicants respectfully submit that Olshenitsky et al. does not disclose or suggest that any other non-pathogenic *E. coli* strain would have a growth-promoting effect.**

For the sake of argument, even if one postulates that Olshenitsky et al. discloses a non-pathogenic organism having a growth-promoting effect in an animal, which Applicants strongly re-iterate Olshenitsky et al. does not disclose or suggest, Olshenitsky et al. **does not provide any guidance, motivation, or suggestion** whatsoever that would have motivated a person skilled in the art to try to experiment with other non-pathogenic *E. coli* strains, even less so with an F4+ strain, in order to promote growth of an animal.

Indeed, Olshenitsky et al. does not describe or suggest what attributes a non-pathogenic *E. coli* strain must possess in order to promote weight gain of an animal, i.e., for instance, such an attribute could be the expression of a particular cytoplasmic enzyme, transmembrane receptor, modified phospholipids, etc. In view of this, a person skilled in the art having read Olshenitsky et al. would have been faced with **undue experimentation** to try to find any other non-pathogenic *E. coli* strain analogous to the therein described strain which would be suitable for promoting growth of an animal.

**Applicants believe that the requirement for such undue experimentation clearly suggests that the presently claimed invention cannot be obvious.**

Furthermore, the present specification clearly demonstrates at least one example of a non-pathogenic *E. coli* strain that **had no effect on the weight gain** and had a similar growth performance as the untreated group. (*See*, F4-negative *E. coli* strain, paragraphs [0102] and [0116].) These findings further corroborate that a person skilled in the art having read Olshenitsky et al. **would be left without any guidance, motivation, or suggestion** to try to obtain a non-pathogenic *E. coli* strain capable of promoting growth of an animal.

It is therefore submitted that Olshenitsky et al. does not disclose or suggest using any non-pathogenic *E. coli* to promote weight gain of an animal and that a person skilled in the art would therefore not look to Olshenitsky et al. for guidance in order to arrive at the invention defined in claim 14.

- **Fourthly, Applicants respectfully submit that Olshenitsky et al. does not disclose or suggest the unexpected growth promoting effect using the claimed F4+ non-pathogenic *E. coli* strains.**

The present specification describes that at day 5, *i.e.*, *before* administration, there was no statistically different weight between the animal groups 1 (control) and 2 (treated), while at day 20, *i.e.*, 15 days *after* administration, **the administration of a single dose of an F4+ non-pathogenic *E. coli* resulted in a significant difference with**

**a higher weight of 849 grams** (*see*, Table 2) and increased *daily* weight gain by 11% (*see*, Table 3).

The present specification further discloses data which suggests that this promoting growth effect **is associated with the F4 determinant or with strains expressing the F4 determinant** since the control groups treated with the **F4-negative non-pathogenic *E. coli* strain**, notably as shown in Tables 7-10, **did not show this effect and had similar growth performance to the untreated group.** (*Also see*, paragraph [0086].)

Nothing in Olshenitsky et al. discloses or suggests the unexpected and surprising growth-promoting effect **associated with the F4 determinant or with strains expressing the F4 determinant**. This is simply not there.

It is therefore submitted that Olshenitsky et al. does not disclose or suggest the unexpected and surprising growth promoting effect associated with the F4 determinant or with strains expressing the F4 determinant and a person skilled in the art would therefore not look to Olshenitsky et al. for guidance in order to arrive at the invention defined in claim 14.

To summarize the above, the Applicant respectfully submits that:

- The Patent Office has failed to established a *prima facie* case of obviousness;
- Olshenitsky et al. ***teaches away*** from using a non-pathogenic Escherichia coli strain to promote growth of an animal.
- Olshenitsky et al. does ***not disclose or suggest*** that any non-pathogenic *E. coli* strain would have a growth-promoting effect.
- a person skilled in the art having read Olshenitsky et al. would have been faced with ***undue experimentation*** to arrive at the claimed invention

- Olshenitsky et al. does ***not disclose or suggest the unexpected*** growth promoting effect using the claimed F4+ non-pathogenic *E. coli* strains.

In view of all of the above, the Examiner will thus appreciate that differences exist between the claimed subject matter and Olshenitsky et al. It is respectfully submitted that these differences are beyond the level of ordinary skill in the art, and the Examiner is therefore respectfully requested to withdraw the rejection of claim 14.

- **Claims 16-30**

It is noted that claims 16-30 depend from claim 14 and, as such, incorporate by reference all the features contained therein, including those that distinguish claim 14 over Olshenitsky et al., as well as additional features that further distinguish the claimed method over Olshenitsky et al. The Examiner is therefore respectfully requested to withdraw the rejection of claims 16-30.

- **New claims 40-42**

New claims 40-42 also depend from claim 14 and, as such, incorporate by reference all the features contained therein, including those that confer patentability to claim 14 over Olshenitsky et al., as well as additional features that further distinguish the claimed invention over Olshenitsky et al. It is therefore respectfully submitted that on this basis alone, claims 40-42 distinguish clearly and patentably over Olshenitsky et al.

Nevertheless, and in addition, it is noted that claims 40-42 include the features of “wherein said F4+ non-pathogenic *Escherichia coli* strain promotes daily weight gain” (claim 40); “wherein said F4+ non-pathogenic *Escherichia coli* strain promotes weight gain while reducing feed intake” (claim 41) and “wherein said F4+ non-pathogenic *Escherichia coli* strain is fed to the animal during the animal’s growth phase and reduces the delay required for the animal to attain a desired weight” (claim 42).

It is respectfully submitted that these features are also not taught or suggested by the cited Olshenitsky et al. and a person skilled in the art would therefore not look to



Olshenitsky et al. for guidance in order to arrive at the invention defined in these claims. Thus, it is respectfully submitted that even greater differences exist between the claimed subject matter and Olshenitsky et al. It is respectfully submitted that these differences are beyond the level of ordinary skill in the art and new claims 40-42 are therefore also patentable over Olshenitsky et al.

### Conclusion

Applicants respectfully submit that the present case is now in condition for allowance. A Notice to that effect is requested. If a telephone conversation would help clarify any issues, or help expedite prosecution of this case, Applicants invite the Examiner to contact the undersigned at (617) 248-4793. Please charge any fees that may be required, or credit any overpayment, to our Deposit Account No. 03-1721, referencing Attorney Docket Number 2003390-0033.

Respectfully submitted,  
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Date: March 2, 2011

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